helm" turning great ships, is here outdone. The wheel stands, in all simplicity, between two uprights, or a slitted upright, fixed on the deck (or a raised platform); there is nothing behind or before the outer surfaces of the uprights. But an essential part of ordinary steering-wheels is the drum or axle extending generally a little way behind (and covered, it may be), on which are wound ropes or chains passing round pulleys to the tiller. A more modern form well known is a screw shaft with levers, &c. The omission in question in these cartoons leaves the scientific mind decidedly "at sea," and with little confidence in the steersman. I suspect the artistic type of mind is rather apt to neglect such details.

It is remarkable, indeed, how many matters belonging to simple observation escape notice by artists. I may perhaps be allowed to note a few points which have occurred to me in glancing over *Punch* from November to the present time, and the three books of cartoons of the *Punch* series.

The electric machine sometimes makes its appearance in *Punch*. In No. 53 of the Beaconsfield cartoons, that gentleman (as a professor) is arranging a circuit between an aristocrat and a working man for a shock. The electric machine behind is evidently meant for one of the Ramsden type, but the brass-work with points to collect the electricity is wanting, and the glass plate seems to have great concealing power. Again, the clever and fantastic sketch at the beginning of the Almanack shows an electrical machine of quite indescribable type, unless it be a Holtz, but it defies all mechanical conception. Perhaps it is not allowable to apply scientific rules to the brilliant insanity of such drawings, but I think there should be more basis of real existence than this one presents.

From many pictures we might be led to infer that left-handedness is much more common than it really is. Thus, a *pince-nez* is held in the *left* hand by Mr. Bright (in No. 19 of the Bright cartoons), by a church dignitary speaking to his daughters (*Punch*, December 21, p. 282), and by an old gentleman who receives a letter on the road on a snowy day (*Punch*, February 1, p. 39). In the Almanack (p. 5) a workman holds a cup in his left hand and a saucer in his right. Reins are frequently held in the right hand (which, I understand, is wrong)—one example is the cartoon of *Punch*, December 14, "Post Equitem." If something might be said for these cases, it is difficult to see how an artist can be justified in putting a quill pen behind the *left* ear, as in the case of Gladstone, when meeting Bismarck (last of Gladstone series), unless, indeed, the right ear were already occupied with one (which is not here the case). A similar remark seems applicable to a caricature of Ruskin by Sambourne (*Punch*, December 7, p. 254).

In an ingenious sketch (*Punch*, February 1, p. 37), in which a complex pocket-knife or sort of *multum in parvo* is made to take the aspect of a formidable animal, the spiral of the cork-screw turns the wrong way.

In one of the Bright cartoons (No. 33), that gentleman appears in court costume before a mirror which slants away from him upwards, but the image, I think, hardly corresponds to this.

One word more, and of a somewat different order of criticism. Heat of certain intensities and in certain circumstances may, of course, be very unpleasant. But, as we have had good reason to know lately, heat may be very welcome and agreeable. Therefore I venture to indict the cartoon of *Punch*, February 15, "Hot water, sir!" as flagrantly at fault. Beaconsfield is bringing in the morning's hot water to John Bull in bed. In the session of 1879 John Bull may very likely find himself "in hot water;" but in the connection to which the picture refers, hot water is a pleasant mitigation to the inevitable discomfort of washing. So John Bull's horrified look could not possibly refer to that. If he were being awoke, as I have been, in a hydropathic establishment, about 6 A.M., by a fiend in human shape, who showed a cynical determination to pack him in a cold wet sheet, the man's implements *might* arouse some horror. In the Beaconsfield cartoon, No. 90, "The Turkish Bath," the metaphor is, of course, all right: "You made it so confoundedly *hot* for me!"

Some of the foregoing are little points, but they prove this much, that there is room for improvement among artists of this class as regards correctness of observation and strict fidelity to fact.

A. B. M.

Intellect in Brutes

In Mr. Nicols' instance of intellect in brutes (Nature, vol. xix. p. 365) he tells us that a plumber "had on several occasions been called in to examine into the cause of leakage of water-pipes under the flooring of houses," and then records *a single instance* of rats having knawed through a pipe. It is important to know whether the plumber knew of another case: for the idea at once suggests itself that the pipe had cracked through frost, and the rats then discovering the leakage gnawed it to get more water.

It has always seemed to me that brute reasoning is always *practical* but never *abstract*. They do wonderful things suggested by the objective fact before them; but, I think, never go beyond it. Thus, a dog left in a room alone rang the bell to fetch the servant. Had not the dog been taught to ring the bell (which on inquiry proved to have been the case) it would have been abstract reasoning, but it was only practical. The Arctic fox—too wary to be shot like the first who took a bait tied to a string, which was attached to the trigger of a gun—would dive under the snow and so pull the bait down below the line of fire. This is purely practical reasoning; but had the fox pulled the string first out of the line of fire *in order* to discharge the gun, and *then* to get the bait, *that* would have been abstract reasoning which he could not attain to.

This practical reasoning is just what young people do, before they can reflect. A boy the other day found the straps of his skates frozen. The fact only suggested *cutting* them. Not one of his schoolfellows reflected upon the abstract fact that the ice would melt if he sat upon his foot a few minutes. Hence brutes and boys are just alike, in that nothing occurs to either beyond what the *immediate* fact before them may suggest. The one kind I call purely *practical* reasoning, which both have; the other, *abstract*, which brutes *never* acquire; but the boy *will* as his intelligence develops.

George Henslow

In Central Park one very hot day my attention was drawn to the conduct of an elephant which had been placed in an inclosure in the open air.

On the ground was a large heap of newly-mown grass, which the sagacious animal was taking up by the trunkfull, and laying carefully upon his sun-heated back. He continued the operation until his back was *completely thatched*, when he remained quiet, apparently enjoying the result of his ingenuity.

It seems to me that *instinct* should have prompted the elephant to eat the grass, and that it was *reason* which caused him to use it for the purpose of diminishing the effect of the sun's rays.

New York, February 8 James J. Furniss

Bees' Stings

Will you allow me, as possessor of a couple of score of hives, to say a word respecting the discussion in your columns as to the effect on *Apis mellifica* of the loss of its sting and appendages.

As far as my observations go, the bee is not seriously injured by the loss, for though imprisoned and watched for some hours, as soon as released it flies back to its hive, and apparently resumes its work as before. However, any one sufficiently painstaking can settle the question finally by marking some such bees, and watching for their departure, and return laden with honey or pollen.

May I ask if any of your readers have yet determined the identity of bee poison and formic acid. The former is said, on exposure to the air, to solidify to a white crystalline mass, but formic acid requires, I believe, a temperature of 0° C. to effect this modification.

J. P. Jackson

Bull's Mill Apiary, Hertford, February 18

P. LE NEVE FOSTER

A VERY numerous body of friends will have heard with regret of the sudden death of Mr. Le Neve Foster, the secretary of the Society of Arts. Though not himself an original worker in science, there were few men better known in scientific circles, or so universally liked where he was known, as Mr. Foster. His connection with the Society of Arts threw him amongst men working in nearly all lines of research, and there are probably few recent instances of the practical application of any new scientific discovery to industrial purposes in which he did not take some interest. Coming up to London with a fellowship from Trinity Hall, he was called to the bar in 1836, and practised for some fifteen or sixteen years

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as a conveyancer. The natural bent of his mind, and some association of his relatives with the Society of Arts, led him to join it, and he soon became a member of its council. The Society was then in anything but a flourishing state. The necessity for such work as it had usefully done at the beginning of the century had passed away, and those who then controlled its destinies were hardly capable of striking out for it a fresh line of action. It was, however, just beginning to revive a little, when the proposal to hold the first great exhibition was taken up by Mr. (now Sir) Henry Cole, Mr. (afterwards Sir) Wentworth Dilke, and some others of the more enterprising spirits who were then gaining the upper hand in the Society. With this reforming party Mr. Foster was associated, and it tells much of the character of the man, of his freedom from self-seeking tendencies, that while other members of the little body worked their way upwards to honours and high positions, he was content to remain without reward, either pecuniary or titular, as a worker for the whole of his life. When Mr. Grove gave up the secretaryship of the Society of Arts in 1853, Mr. Foster, resigning the post he then held on its Council, was appointed to the office, an office which he held till the day of his death, last Thursday. Since then his career has been associated with that of the Society. This grew in numbers and influence, and so the Secretary's office increased in importance. During the twenty-five years in which he guided it, it did a great deal of good work, and, it may be owned, some which was not of much value. The trivialities soon passed away and were forgotten, the good work endures. In undertakings such as that of a public society most of the work and but little of the credit falls to the executive officer, and probably, if the truth were known, many of the crude ideas first launched into the world at the Society of Arts owed their ultimate success to their having been hammered into a practical form by the secretary. Ever ready with advice, the fruit of long experience, never bored even by the most importunate of inventors, ready to find something good, something to praise in the most impracticable of schemes, he won the friendship, even the affection, of all who knew him.

At many scientific gatherings his genial presence will be missed. His was a well-known figure at the British Association meetings. For thirteen years he acted as secretary to Section G (Mechanical Science), and from 1863 to 1866 he served on the Council of the Association. Taking an intelligent interest in several branches of science, it was to photography that he principally devoted himself. He was one of the earliest amateur photographers, and continued to work energetically at his favourite pursuit down to the time of his death. One of his last bits of out-door work, before his camera was laid aside for the winter, was to take a view of the Obelisk on the Embankment, a day or two before it was swung from a horizontal into a vertical position. He wrote a good deal on photographic subjects, mainly in the pages of the *British Photographic Journal*, and similar periodicals. He also wrote the article on photography in the series of volumes on "British Industries," published by Mr. Stanford. He was an occasional contributor to several of the scientific and technical journals, and wrote a good deal in the *Journal* of his own society, which, though not founded by him, was published from the beginning under his auspices, for he was on the Committee of Publications when it began, and his secretaryship commenced before the completion of its first volume. The older series of *Transactions*, it will be remembered, ceased some few years before the *Journal* was started. Mr. Foster was one of the founders of the Photographic Society, and served till a few years ago on its council. He was also President of the Queckett Club for a year. The manner of his death was startlingly sudden. Returning home after his day's work, he sat down to read the newspaper before dinner, when one of his family coming into the room after he had been by himself only a few minutes, found that he had fallen back from his chair dead. The cause of death was fatty degeneration of the heart. He died as we might all wish to die, at a ripe old age (nearly seventy), quietly and easily, after a good life's work, and in harness till the end.

He did not live to receive a testimonial which his friends had just collected for him, and these same friends now propose to do what they can to increase the amount for the benefit of those he has left behind.

DR. APPLETON

We were only able last week to note briefly the loss which learning and science have sustained in the death of Dr. Appleton at the early age of thirty-eight years. Dr. Appleton was born at Reading, where, and at St. John's, Oxford, he received his education. His special bent lay more in a literary and philosophical than in a scientific direction; but, as we indicated, his services to the advancement of science in this country have been very great. He may, indeed, be regarded as the originator of the movement for the endowment of scientific research; and it is greatly owing to his unceasing activity and influence that anything has been done in this direction by Government. To quote the words of the memoir in the *Academy*, of which he was the founder, and which, for the sake of sound criticism and accurate knowledge, we trust will be a lasting monument to his energy, and the breadth of his culture:—"With an enthusiasm which nothing could chill, and a belief no opposition could shake, he endeavoured to inspire his countrymen with the same zeal for learning and science that he felt himself, and to rekindle among them the well-nigh extinguished love of disinterested study and research. Where others talked, he acted; where others wavered, he continued firm. Through good report and evil report he struggled on towards the goal he saw clearly before him, and the confidence he felt himself was communicated to those who worked with him. Gifted with the power of organisation, with boundless energy, and with the art of influencing others, he was marked out as the leader of a forlorn hope. Defeat was impossible for him, and disappointment only increased his courage and activity. It was in Dr. Appleton's hands that the movement in favour of the endowment of research took solid shape and organisation. His exertions brought about the meeting at the Freemasons' Tavern in 1872, which first drew public attention to the fact that the universities exist for something higher than the examination of young men. From that time forward Dr. Appleton took an active share in the agitation that resulted in the passing of the Universities Act of 1877, and none of the opportunities which his editorial position gave him were allowed to be lost. Besides letters in the *Times*, the *Pall Mall Gazette*, and elsewhere, he wrote two elaborate articles on 'The Economic Character of Subsidies to Education' and 'The Endowment of Research as a Form of Productive Expenditure,' both republished in the volume of 'Essays on the Endowment of Research,' of which Dr. Appleton was editor."

We are pleased also to be able to refer in this connection to an article in the *Athenæum*. Although there are some parts of this article which we certainly could not quote. In this it is acknowledged that Dr. Appleton had raised a great question, and given it a hold on public interest, "and there can be no doubt that the movement which he, more than any other single man, had set on foot had considerable effect on several of the provisions of the Universities Act passed by the present Government." . . . "For a man who died before he was thirty-eight it is no slight achievement to have forced such a question as this on the sluggish attention both of the public and of Parliament."

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